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ABSTRACT

This newsletter issue contains four articles all addressing aspects of intervention with infants and toddlers having communication disorders. The first, "Assessing the Communication of Infants and Toddlers: Integrating a Socioemotional Perspective" (Barry M. Prizant and Amy M. Wetherby) describes a new instrument, the Communication and Symbolic Behavior Scales, which provides an integrated evaluation and planning tool for young children at risk of developing communication disorders. Case studies of the scale's application are provided. The second article is "Communication Development in the First Two Years of Life: A Transactional Process" by Lee K.S. McLean. It describes four communication stages from reactive perlocutionary communication to conventional illocutionary and emerging locutionary communication. "An Intensive Approach to a Toddler with Emotional, Motor, and Language Delays: A Case Report" is the third article. The case study illustrates the importance of four processes, attention and engagement, establishing intentionality and two-way communication, sharing of meaning, and categorizing meanings. Finally, "A Nonverbal Intervention for the Severely Language Disordered Young Child: An Intensive Approach," by Dianne Lynch Fraser, examines the effectiveness of a dance-movement therapy intervention conducted over a 2-year period with one severely language disordered young child. (DB)

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Zero to Three

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Assessing the Communication of Infants and Toddlers: Integrating a Socioemotional Perspective

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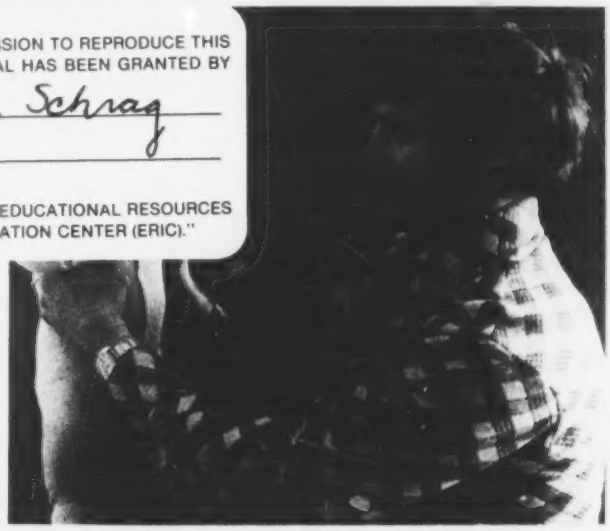
"He's starting to show us things—he never did that before."

"She gets angry when we can't understand what she wants."

"He never asks for help or for comfort when he's hurt. It doesn't seem to make any difference to him when we come or go."

When caregivers describe the communicative behavior of infants and toddlers, their comments frequently suggest the close link between the development of communication and language in the early years and the growth of socioemotional competence. Unfortunately, researchers have begun only recently to integrate socioemotional and communicative perspectives on development. The extensive body of research on communication and language development has given little consideration to socioemotional development—the growth of a child's ability to experience and express a variety of emotional states, to regulate emotional arousal, to establish secure and positive relationships, and to develop a sense of a distinct, capable self (Prizant and Wetherby, 1990). Similarly, research on socioemotional development has rarely considered the impact of emerging language and communicative competence on a child's socioemotional well-being and social competence.



FLORENCE SHARP

The fragmented picture of early development that has resulted from such separated lines of research hampers not only our intellectual understanding of young children, but also our efforts to assess and assist infants and toddlers at developmental risk. Recent literature on language and communication delays in young environmentally at-risk children, and on the co-occurrence of emotional and behavioral disorders and

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communication disorders in older children clearly points to the close relationship of these aspects of development. Yet assessment approaches continue to chart isolated developmental strands or domains. And fragmented assessments all too often lead to disjointed intervention strategies.

For the past five years, we have been working to integrate socioemotional and communicative perspectives on development. In this article we share the framework we have developed to document communication and symbolic abilities of infants and toddlers who communicate at levels ranging from early preverbal intentional stages of communication (approximately 8 months) to early multi-word stages of expressive communication (approximately 24 months). We will begin by underscoring the need to integrate insights from our current knowledge of communication and socioemotional development in infancy. We will review typical approaches to early communication assessment, which virtually ignore socioemotional issues. In describing our recently developed instrument, the *Communication and Symbolic Behavior Scales* (Research Edition) (Wetherby and Prizant, 1990), which is currently undergoing national field testing on 400 to 500 infants and toddlers, we will pay special attention to the dimensions of the *CSBS* that focus on socioemotional aspects of the development of communication.

Importance of integrating aspects of communication and socioemotional development

In research and literature on early childhood development, in depth considerations of the interdependencies and mutual influences of early socioemotional and communication development are few. Early infancy researchers have focused their efforts on preintentional affective signaling of infants in the first eight to ten months of life, clearly demonstrating infants' abilities to actively initiate, participate in and regulate interactions with caregivers. The term *communicative signals* has been used in reference to signals that inform the receiver of an infant's physiological or emotional state (Brazelton, 1982; Tronick, 1989). Dunst and Lowe (1986) have referred to the earliest stage of communication (birth-three months) as *behavioral state communication*. Researchers studying later communication development, while acknowledging the continuity of development from early in the first year of life, have tended to focus their efforts on the acquisition and intentional use of gestural and liguistic means of communication, beginning towards the end of first year of life (Bates et al., 1987).

In recent years, a few efforts have been directed towards understanding interrelationships in development in both normally developing and at-risk children. For example, Adamson and Bakeman (1985) studied affective signaling and referential communication in normally developing infants in the first and second year of life. They observed that affective displays provide infants with a means to comment on themes in play and serve as an early form of greeting. These authors contend that by 12 months of age, affective and referential communication systems become integrated. Stern (1985) noted that "early in life affects are both the primary *medium* and the primary *subject* of communication" (p. 133). He added that "most protolinguistic

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exchanges involving intentions and objects are at the same time affective exchanges ... the two go on simultaneously" (p. 133). However, according to Stern, infants are more adept at communicating emotions than specific intentions at the end of the first year..

Recent literature on language and communication delays in young environmentally at-risk children, and on the co-occurence of emotional and behavioral disorders and communication disorders in older children clearly points to the close relationship of these aspects of development. Cicchetti (1989) and his colleagues have investigated language and communication in maltreated children. At 31 months of age, they found differences in language and communication between maltreated children and non-maltreated controls matched for low socioeconomic status, with the maltreated group demonstrating significantly lower abilities. Cicchetti noted that "these investigations provide compelling support ... that social and emotional factors play important roles in the development of language" (p. 412).

Given the range of potential problems, for children and caregivers, that involve communication, language and socioemotional development, we must move toward more integrated assessment and treatment approaches.

Efforts to develop a greater understanding of the mutual influences of these aspects of development are crucial for understanding the challenges faced by these children. Over the past decade, numerous studies have documented the co-occurence of communication disorders and emotional behavioral disorders in children and adolescents (see Prizant, Audet, Burke, Hummel, Maher and Theadore, 1990 for a review). Although many questions remain regarding causal relationships, it is generally agreed that infants or toddlers with communication delays or disorders are at high risk for the development of emotional and behavioral disorders (Baker and Cantwell, 1987). Greenspan (1988) and Howlin and Rutter (1987) discussed the potential for the development of relationship difficulties between young children and their caregivers when a child's communicative signals are difficult to read, or when a child is unresponsive to the communicative bids of others. As noted, children raised in abusive or neglectful situations are at high risk for developmental delays in general, and more specifically, delays in social and communication development. Finally, some developmental disorders (e.g., Pervasive Developmental Disorder including Autistic Disorder), which are presumed to have a neurological basis, are defined by qualitative impairments in both nonverbal and verbal communication development and in social relatedness (APA, 1987). Given the range of potential problems experienced by children and their caregivers involving communication, language and socioemotional development, it is essential that researchers and clinicians move toward more integrated approaches addressing these aspects of development.

Introduction to this issue:

"Consult us earlier," is the plea of speech-language pathologists to their colleagues who work with infants, toddlers and their families. Perhaps the lack of attention to monitoring the early stages of children's communication that makes such a plea necessary is related to the fact that many infant/family practitioners appreciate only in a general sense how important language and communication are to overall early development. We have not known how language and communication skills contribute specifically to such early personality functions as forming relationships, testing reality, controlling impulses and acquiring positive self esteem. In fact, language and communication skills are critical to negotiating the stages of early emotional development during which children build these vital personality functions.

To learn to pay attention and form a relationship involves, among other processes, decoding simple vocal rhythms. We observe this happening in the synchronous vocalizations between an emotionally connected, joyful four-month-old and his caregiver. **To interact intentionally,** first in simple and then in complex ways, involves comprehending and using gestures and simple words. A nine-month-old reaching out to be picked up or flinging food to the floor with a disgusted look is signalling clearly to mother or father. **To construct meanings** involves understanding and expressing ideas. This is observed when a two-and-a-half-year-old says "Me mad!" or has her dolls "get mad" rather than using a temper tantrum to express anger. **To categorize meanings** involves logically connecting ideas to each other. We see this process when a three-and-a-half year old bargains verbally for a later bedtime ("Let me stay up late; I'll be good") rather than tuning out the parent's request that the child prepare for bed. (These stages are discussed more fully in my article on pp. 20-22 and the references cited).

The articles in this issue of *Zero to Three* provide a detailed guide to the development of communication and language and its important implications for clinical practice. Based on presentations at the 1989 National Training Institute of the National Center for Clinical Infant Programs, the contributions by Barry Prizant and Amy Wetherby, Lee K.S. McLean, Diane Fraser and myself are designed to be useful guides to assessment and intervention for readers from a range of backgrounds.

Stanley I. Greenspan, M.D.

Common approaches to early communication assessment

The developmental checklists and formal assessment protocols commonly used to assess communication and language in infants and toddlers are limited in scope. Because they do not yield an integrated picture of communication and socioemotional development, they cannot make the connection, for clinicians, between specific aspects of a child's communication and language development and that child's emerging socioemotional competence. We have found that (Wetherby and Prizant, in press) in commonly used assessment approaches to early communication and language:

- Assessment tends to focus on forms of communication (e.g., presence of words, gestures, etc.) rather than the functions served by those forms or the intentions expressed.

- Analysis of preverbal communication is limited or absent.
- Assessments tend to focus on speech milestones, like dates of first words, rather than or a child's overall ability to participate in communication and conversation.

- Most approaches do not yield a profile across language, communicative, social-affective and language-related cognitive domains. Such a profile is essential for understanding children's unique learning strengths and needs.

- Some assessments rely solely on parent report. Direct assessments of a child's abilities by a professional examiner tend to place a child in a respondent role. Neither approach offers the opportunity to observe a young child's spontaneous communication and social-affective signaling in highly motivating interactions with a clinician and caregiver together.

Given these limitations, we sought to develop a framework and a clinical research instrument that would provide clinicians and caregivers with the means to profile a child's learning strengths and needs, as well as provide directions for early intervention efforts. The purpose of our instrument, the *Communication and Symbolic Behavior Scales* (Research Edition) *(CSBS)* (Wetherby & Prizant, 1990) is two-fold: first, to be used for early identification of children who have or who are at-risk for developing a communication impairment; and second, to establish a profile of communication, symbolic and social-affective functioning to provide directions for further assessment, and to plan intervention and monitor changes in abilities over time.

The *CSBS* utilizes a standard, but flexible format for data gathering through a variety of procedures, including parent interview, direct elicited sampling of non-verbal and/or verbal communicative behavior and observations of relatively unstructured play activities. Materials are presented to a child in a designated sequence with minimal intrusion or direction on the part of the clinician. Our materials and procedures are designed to entice young children to communicate. For example, we blow dozens of soap bubbles for the child, then put the wand back in the bubble jar and screw the lid on tightly. What two-year-old can resist asking for help to make the show happen again? (Due to the current format of the *CSBS*, it is not appropriate for children with significant visual impairments or motor limitations of the upper extremities.) The child's primary caregiver is present during the full evaluation and is encouraged to interact with and respond naturally to his or her child in order to encourage spontaneous play and communication. The evaluation is videotaped for later analysis, allowing the clinician or educator to give full attention to the child and his or her caregiver during the sampling procedures and play interactions. Although the CSBS was designed primarily for infants and toddlers, it can be used with children up to six years of age whose abilities fall within the 8-24 month developmental range of expressive communication.

The *CSBS* yields data that is converted to scores on twenty 5-point scales. Seven cluster scores can be derived in areas of communicative function, gestural communicative means, vocal communicative means, reciprocity, social-affective signaling, verbal symbolic behavior and nonverbal symbolic behavior. For the purposes of this discussion, we will focus most specifically on those scales that provide important information regarding socioemotional aspects of communication and play. These include scales in the communicative function cluster (range of functions, behavioral regulation acts, joint attention acts), the conventional gestures scale, the repair strategies scale, scales in the social affective signaling cluster (gaze shifts, positive affect, negative affect) and nonverbal symbolic behavior scales (symbolic play, combinatorial play).

Dimensions of the CSBS focusing on communication and socioemotional perspectives

Communicative functions: An analysis of the functions of a child's verbal and nonverbal communicative acts is based on three categories of innate communicative intentions that emerge by the end of the first year of life (Bruner, 1981). The categories are:

1. *Behavioral regulation,* which includes signals to regulate another's behavior for purposes of obtaining or restricting an environmental end. Specific functions within this category include requesting objects and actions, and protesting,

2. *Social interaction,* which includes signals used to attract and maintain another's attention to oneself for affiliative purposes. Specific functions within this category include requesting social routine, requesting comfort, calling, greeting, showing off, and requesting permission, and

3. *Joint attention,* which includes acts used to direct another's attention to an object or event for the purpose of sharing the experience. Specific functions in this category include commenting on an object, action or event, and requesting information.

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Research has demonstrated that normally developing children communicate for specific functions in all three general categories before the emergence of first words (Wetherby, Cain, Yonclas and Walker, 1988). Furthermore, research on preschoolers with disorders of communication and social relatedness (i.e., autism, PDD) indicates that these children may be able to communicate for less social purposes of behavioral regulation (i.e., requesting objects or actions, protesting), but typically demonstrate significant limitations in communicating for social interaction functions, with the greatest limitations in communicating to establish joint attention (Mundy, Sigman, & Kasari, 1990; Wetherby, 1986). For children with communication and social-affective disabilities, movement along the continuum of communicative functions from behavioral regulation to social interaction to joint attention is indicative of greater social relatedness and sociability in communication (Prizant and Wetherby, 1987), even though the *sophistication* of means to communicate (i.e., primitive gestures, conventional gestures, words) may not change. In other words, a child who communicates for all three functional categories, even if primarily through gestural means, may be considered as having greater socioemotional competence in communication than a child who communicates primarily for behavioral regulation, even if at higher levels of sophistication (e.g., through words).

Thus, it is our contention that patterns of communicative function in natural communicative interactions provide a window into a child's emerging socioemotional competence. Children who show the greatest competence are motivated to bring attention to self to engage others in interaction (i.e., social interaction) and to share experiences and observations with others (i.e., joint attention) rather than communicating primarily for instrumental goals (i.e., behavioral regulation). In our work with children and families, we find that many caregivers are sensitive to developmental changes that result in their children communicating for more social purposes. Typical comments from caregivers include "He's now interested in showing us things whereas he never did that before" or "She used to communicate primarily to get things from me, but she now communicates to be with me and to share her observations with me".

Social-Affective signaling: Early in infancy, affective communication between a caregiver and young child

occurs primarily through face-to-face gaze, body posture, touch and vocalization (Brazelton, 1982). Even as children develop a more complex and sophisticated system for expressing emotional states, face-to-face interaction and communicative gaze continue to be primary media for sharing affect, regulating interactions, and referencing the attention of a communicative partner.

The *CSBS* documents three dimensions of social-affective signaling during interactions between a child and the clinician and/or caregiver. We look first for gaze shifts. If an infant or toddler shifts his gaze between objects and people, we infer that he expects others to share and be interested in his experience.

The second dimension in the social-affective signaling cluster is positive affect, a measure of sharing of positive affect with others during play and communicative interactions. Sharing of positive affect is defined as establishing face-to-face gaze with clear facial expression of positive affect, demonstrating an interest and willingness to share emotional states. It is not uncommon for children with significant communication and social-affective impairments to express positive affect in object exploration or play; however, sharing of affect with others may be limited (Kasari, Sigman, Mundy & Yirmaya, 1990).

The third dimension, episodes of negative affect, documents vocal and facial expression of negative affect, but does not require that the expression be directed to others. The rationale for measuring episodes of negative affect on the *CSBS* is that the procedures are designed to be relatively non-intrusive and non-stressful to a child. Thus, negative affect, which tends to be documented infrequently on the *CSBS*, typically occurs when children are frustrated due to their inability to express communicative intentions in an understandable manner. Often, such children are clearly goal-directed in their behavior, but have not yet developed a signaling system of sufficient conventionality and/or complexity to accomplish their goals. Thus, negative affect tends to be observed more frequently in children with highly idiosyncratic and unconventional communication systems, and/or a history of unsuccessful communication. In our experience, caregivers of these children often attribute their child's challenging behavior to communicative limitations by commenting that "He gets frustrated or angry when he can't express his needs, or when we can't understand what he wants".

Conventional gestures: Early in development, young children acquire a variety of conventional gestures that serve a variety of communicative functions (Bates, et al., 1987). By 12 to 24 months of age, children communicate intentionally through proximal and distal pointing, waving, reaching, showing objects and giving or pushing away objects. These conventional gestures are used to express the full range of intentions discussed earlier. Somewhat later in development, head shakes and head nods are used to indicate affirmation or rejection/protest. A competent preverbal communicator will demonstrate use of the full range of gestures. These conventional gestures are learned through frequent interactions and observations of others.

It is our experience that children with a limited history of positive social interaction, and/or a primary social-communicative impairment such as autism, may develop and use idiosyncratic and concrete gestures, such as physically manipulating others, in lieu of the development of conventional gestures. These observations are supported by research documenting limitations in preverbal communicative signaling of children with autism and Pervasive Developmental Disorder (see Prizant, 1988 for a review). Thus, it is our contention that the range of conventional gestures used in communicative signaling, along with the range of communicative functions noted above, provides insight into a child's ability to learn observationally in social contexts to use conventional gestures for a range of purposes. It also is our experience that the behavior of children with limited conventional communicative means is less readable, requiring others to impute intent to unclear signals or to anticipate their needs.

Repair strategies: A young child's efforts to express intentions and accomplish goals may be hindered by a number of mitigating factors including environmental distractions, inability to secure a receiver's attention, a receiver's lack of willingness to respond, and/or production of unclear signals. A competent communicator must have the goal-directedness and social motivation to persist, and if necessary, the ability to modify communicative acts to express intentions successfully. Children with communication and other developmental delays, as well as environmentally at-risk children, may be passive or reticent communicators due to social and cognitive impairments, and/or a history of limited success in communication. Thus, these children may be in a double jeopardy situation. First, by the nature of the communication impairment, their signals may be difficult to read, and second, they may not have the motivation or competence to repeat or modify their communicative bids to repair breakdowns. It is our belief that the ability to repair breakdowns is a significant factor contributing to a child's communicative and socioemotional competence, for it allows for greater reciprocity and success in social exchange. Therefore, assessment of a child's ability to persist and repair provides information at the interface of a child's communicative and socioemotional competence.

Patterns of combinatorial vs. symbolic play: One final area which provides indirect information regarding a child's socio-emotional development is the pattern of play behavior. Research has demonstrated that development of symbolic play and language abilities is highly correlated (Bates, et al., 1987; Westby, 1988). As with conventional signaling, the capacity for symbolic play emerges in the context of interaction with and observation of other persons. On the other hand, constructive or combinatorial play, which reflects another form of symbolic competence having to do with internal visual-spatial representation, may be acquired

ROBERT MAUST

in relatively non-social situations. We speculate that this is because visual-spatial problem solving in combinatorial play (e.g., playing with blocks, nesting cups, stacking rings) involved visual-spatial judgments made with materials in the "here and now" rather than having to rely on previous social experience as in symbolic play. It is our experience that children with primary communication and social-affective impairments such as autism and PDD typically demonstrate a discrepancy between abilities in combinatorial play and symbolic play, with the latter being significantly depressed. This is supported by research on patterns of abilities and disabilities in children with autism, documenting specific weaknesses in symbolic play and relatively intact nonverbal skills in constructive and combinatorial play (Wetherby & Prutting, 1984).

Case examples

In order to demonstrate how the *CSBS* addresses issues of socioemotional development in the context of assessing communication and symbolic abilities, four case examples will be presented along with their *CSBS* profiles. For each case example, the child's *CSBS* profile is compared to preliminary data on 17 normally developing children (9-14 months of age) at the same stage of expressive language development (i.e., at intentional prelinguistic stages of development). The scales were designed so normally developing children would achieve a score close to the highest point (5) on the communication scales (i.e., scales 1-16) by 18 months, and close to the highest point (5) on the symbolic scales (i.e., scales 17-20) by 24 months. All names used are fictitious.

Adam

Adam, who was assessed at 23 months of age, is a twin who was taken from his biological parents at one year of age by a state agency overseeing social services, due to documented neglect and abuse. Adam was separated from his twin sister, and placed in a foster home which included three other foster children and three adopted children. Referral for the communication evaluation was made by a child psychiatrist who expressed concerns regarding communication functioning. Adam was originally referred to the child psychiatrist by his foster parents, who were concerned about his lack of developmental progress in the 11

months since he had been placed in their foster home. According to his foster mother, Adam was extremely passive and lethargic and had to be "pushed" to perform or communicate even if he was wet or hungry. Adam's medical and developmental history in the first year of life was unknown to his foster parents. However, they indicated that upon entrance to their home at 12 months of age, Adam was a healthy child of appropriate size and weight and was walking independently.

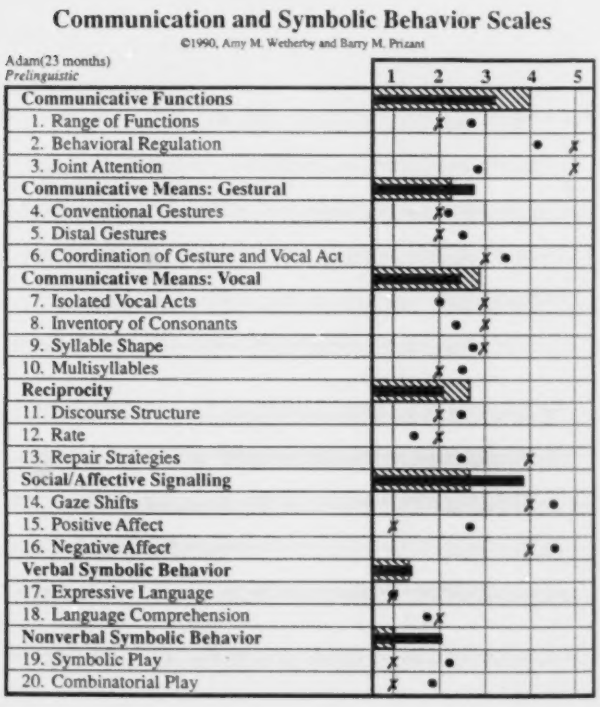

Figure 1: Results on the CSBS *for* Adam, *who had a history of neglect and abuse. He is in the prelinguistic stage and is 23 months of age. The Xs are scores on the 20 individual scales and the unfilled bars with diagonal lines are average cluster scores. The solid circles and bars represent mean scores of 17 normally developing prelinguistic children (9-14 months of age).*

Adam's foster parents reported the following information about his communicative behavior at home. He had developed some imitative speech at approximately 18 months, but that had stopped, with only occasional words infrequently heard. He communicated primarily by pointing and reaching; however, his passivity required that adults anticipate his needs. When frustrated, he engaged in some self-abuse behavior including scratching at his legs and face on occasion. He typically either sat passively, or attempted to obatin objects by himself, rather than request assistance. He had not been observed to seek comfort when distressed, and did not greet persons or indicate any awareness of entrances or departures of others. His affect was reported to be generally flat. He reportedly became frustrated easily, with much whining. For the most part, Adam was reported to be a silent child. He did not interact with other children but responded somewhat better in one-to-one situations with adults. Prior to the *CSBS* administration, Adam achieved a Mental Development Index of 104 on the *Barley Scales of Infant Development.*

Adam presented as a lethargic but alert child. Through his body posture and facial expression, he demonstrated a clear air of cautiousness, even though he appeared interested in materials presented during the *CSBS.* He became noticeably more motivated to interact approximately half-way into the evaluation when looking at books, but did not participate in the full *CSBS* due to active rejection of symbolic and combinatorial play materials towards the end of the session. His foster parents reported that during the evaluation, he was far more communicative and interactive than they typically observe. His attention was excellent.

As can be seen in Figure 1, Adam demonstrated a scatter of abilities when compared to children in a prelinguistic stage. He clearly demonstrated delays in all areas relative to children at either a single word or multi-word stage except for the communicative function scales (not shown). Adam communicated for functions of behavioral regulation and joint attention, with a rate of communicative acts of 1.3 per minute. Communicative acts for joint attention primarily involved using a contact pointing gesture (i.e., his finger touched the item of reference) to establish joint attention to materials and pictures in books. He did not demonstrate any acts for social interaction and actively rejected and displayed wariness about activities involving sustained face-to-face interaction, or physical contact. Adam used only two conventional gestures, pointing and giving, and demonstrated only two instances of distal pointing. No expressive language forms were produced.

Social/affective signaling was characterized by use of gaze shifts for social referencing; however, no instances of positive affect and one expression of negative affect was noted. This resulted in an overall picture of an extremely limited range of affect, giving an impression of extreme cautiousness. In fact, direct face-to-face interaction appeared to be stressful for Adam. Adam's low score on nonverbal symbolic behavior reflects his rejection of these activities; however, his *Bayley MDI* indicates age appropriate cognitive skills.

Adam's profile is indicative of a child who is clearly demonstrating developmental delays in specific areas of functioning, most notably expressive and receptive language and social-affective relatedness. Of particular interest is his ability to communicate for shared attention and his use of gaze shifts for social referencing, indicating clear awareness of others, and the presence of basic social competence. However, Adam's history of neglect and abuse appears to be evident in his clear rejection of face-to-face interaction during social games and his extremely limited range of affect. These observations are consistent with research on children with a history of neglect and abuse

in which language and developmental delays are attributed to neglectful and abusive experiences in early childhood (Cicchetti, 1989).

Billy

Billy was evaluated at 24 months, 9 days on referral by his parents who were concerned about communication and social development. Billy lived with his parents and a four year old brother. Medical history was reported to be unremarkable. Billy was the product of a full term pregnancy and normal delivery. His mother indicated that motor milestones were normal, but that he had not yet acquired speech for communication. However, a few words had been heard infrequently, mostly without clear communicative intent. His parents felt that little improvement in communication had been noted in the six months prior to the evaluation.

Billy presented as an alert and attractive child who appeared to be aware of others, but who demonstrated limited positive affect and eye contact. He was able to participate in the full evaluation, although attention was somewhat variable. He demonstrated a clear object focus when given objects, with some difficulty coordinating attention between persons and objects. His parents indicated that his behavior was typical of observations in other settings.

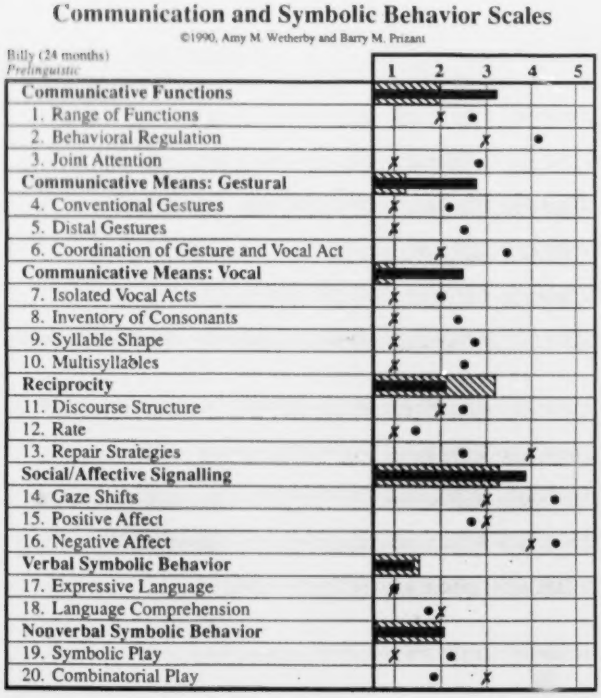

Figure 2: Results on the CSBS *for* Billy, *who presented with a social communicative impairment. He is 24 months of age and is in the prelinguistic stage. The Xs are scores on the 20 individual scales and the unfilled bars with diagonal lines are average cluster scores. The solid circles and bars represent mean scores of 17 normally developing prelinguistic children (9-14 months of age).*

As shown in Figure 2, Billy demonstrated a skewed profile and communicative functions, communicating primarily for behavioral regulation functions of requesting and protesting, and an absence of joint attention acts. Only one form of conventional gesture was observed (i.e. giving) and no distal gestures were observed during the evaluation. He often physically manipulated his mother's hand or the evaluator's hand to request.

Billy's rate of communication was .5 communicative acts per minute and he was able to repair breakddowns by repeating acts, and in one instance, by modifying an act. Social-affective signaling was somewhat limited, but not totally absent. Gaze shifting for social referencing occurred most often prior to requests and protests, and a few instances of sharing of positive affect was noted with one episode of negative affect. No expressive language forms were documented.

Billy's profile is indicative of a child with delays in most areas when compared to children at a prelinguistic level. An exception is the reciprocity cluster, where a high score in repair strategies was noted. Significant limitations were noted in communicative functions, and gestural and vocal means. Combinatorial play was significantly higher than symbolic play, which was absent. When compared to other children within his chronological age range, Billy demonstrated even more significant delays in all areas.

Billy's profile is characterized by an absence of joint attention acts, a predominance of intentional communication for behavioral regulation, the use of relatively primitive gestures, and a limited use of gaze shifts and limited range of affect. Greater abilities were observed in play of a relatively non-social nature (combinatorial play) when compared to play dependent upon social experiences (symbolic play). This profile is characteristic of children within the spectrum of Autistic Disorder (APA, 1987), although a diagnosis is clearly not warrented at this young age (Prizant & Wetherby, 1988).

Jimmy

Jimmy, 32 months 16 days, was referred by his mother and early intervention program speech-language pathologist in order to obtain specific information regarding his level of communication and play abilities. Jimmy was born at full term with no remarkable pre- or perinatal history. He had a history of recurrent otitis media beginning at 6 months of age with a reported extreme fluctuation of hearing acuity and perforated tympanic membrane. He received medication on a regular basis for his ear infections, which reportedly was successful in controlling them. Two hearing tests performed 3 and 9 months prior to this evaluation indicated thresholds within normal limits.

Jimmy lived at home with his parents and five year old brother. On the *CSBS* interview, his mother and early intervention personnel indicated that he communicated through a variety of means including sounds, gestures, pointing (which had recently emerged) and

emerging word approximations. Significant changes had been observed in his communication in the six months prior to the evaluation visit, including the appearance of word and word approximations and increased social orientation and motivation to communicate. He reportedly continued to demonstrate limitations in social behavior including infrequent eye contact and limited interest in other children.

Jimmy reportedly responded most consistently to gestures accompanying speech. At other times, he did not orient or respond to speech at all. He reportedly did not initiate interaction with other children, but he was beginning to demonstrate an increased interest by observing them in play while remaining on the periphery.

Jimmy presented as a very pleasant and positive, but somewhat unrelated child. His behavior was inconsistent throughout the evaluation ranging from clear attention and interest to less goal-directed and self-focused repetitive exploratory behavior. When engaged with others, his affect was extremely positive with evidence of clear social orientation. His mother noted that in general, he was more attentive and alert in one-to-one interactions rather than group interactions.

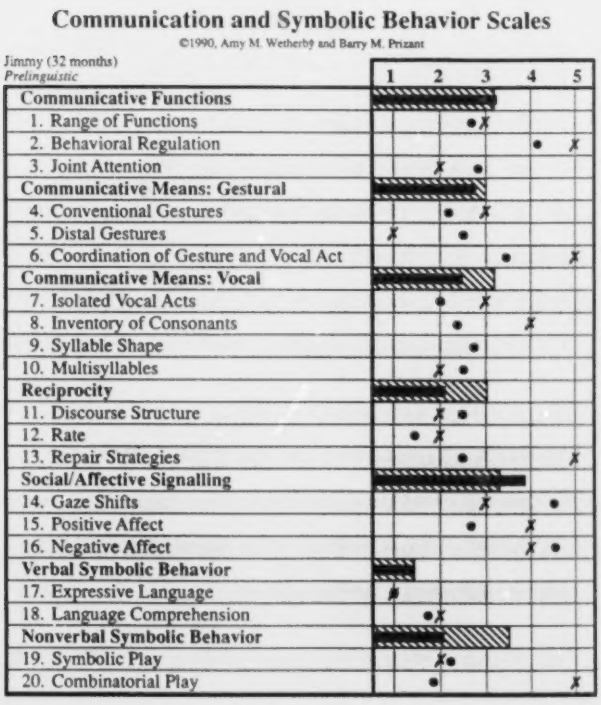

Figure 3: Results on the CSBS *for* Jimmy, *who presented with a social communicative impairment. He is 32 months of age and is in the prelinguistic stage. The Xs are scores on the 20 individual scales and the unfilled bars with diagonal lines are average cluster scores. The solid circles and bars represent mean scores of 17 normally developing prelinguistic children (9-14 months of age).*

On the *CSBS*, shown in Figure 3, Jimmy demonstrated abilities commensurate or greater than normally developing children at prelinguistic levels. One exception was the slightly depressed score in social-affective signaling. Compared to children at multi-word stages who are at significantly younger chronological ages (not shown), he showed clear delays in all areas of ability. Jimmy's communicative function profile demonstrates a significantly greater proportion of behavioral regulation acts as compared to joint attention acts, indicative of a social-communicative impairment. However, increased social interest, as noted earlier, had reportedly emerged as evidenced by increasing acts for social interaction and joint attention. Parents reported that such behavior was absent three months prior to the evaluation.

Jimmy's communicative acts were primarily vocal and gestural, with conventional gestures being limited to giving, reaching and contact pointing. Jimmy's rate of communicative acts was 1.1. per minute, and he demonstrated the ability to repeat and modify acts in persisting to repair communication breakdowns. Social-affective signaling was characterized by limited gaze shifts for social referencing, with a relatively high level of shared positive affect. Nonverbal symbolic behavior was characterized by an extreme discrepancy between combinatorial play and very limited symbolic play.

Jimmy's profile is indicative of a child with a significant social-communicative impairment (i.e., Pervasive Developmental Disorder). But is also indicates a shift from extreme limitations in social-communicative functioning as reported by his parents, to a profile indicative of emerging socioemotional competence. Given Jimmy's history of a virtual absence of eye contact and limited social-affective signaling as recent as three to six months prior to the evaluation, it appears as if Jimmy is "blossoming" socially. This is evidenced by an increase in gaze shifts, shared positive affect and the beginning use of communicative acts for social interaction and joint attention functions. His parents indicated that he has just begun to "show them things" and to initiate social games, which is commensurate with the findings of this evaluation. Reported increased interest in other children in the early intervention program is another indicator of socioemotional growth.

Cole

Cole, 24 months of age, was referred for an evaluation by an audiologist due to concerns about speech and language development. Cole lived with his parents and eight year old brother, who was delayed in speech and language development due to chronic otitis media. Cole was the product of a full term pregnancy with no significant illnesses in childhood. All developmental milestones were reported to be within normal limits except for speech and language development. First words and symbolic pointing had only begun to appear a few weeks prior to the evaluation, with word approximation produced only in limitation. His parents reported that he periodically "tuned them out", and did not consistently orient to speech; however, hearing

testing was within normal limits. Response to speech reportedly occurred most consistently when gestures were used to supplement speech. Cole's parents reported him to be a socially engaging child who communicated through concrete gestures and vocalizations. They noted that, for the most part, he was a happy child, and became frustrated primarily when he could not have his way.

Cole presented initially as a wary and cautious child, but quickly became interested in activities and demonstrated much enthusiasm in interaction and play. His attention was excellent throughout the evaluation, and he communicated actively with his parents and the evaluator with much positive affect. His parents reported that in general, his behavior was typical, and even somewhat more positive than they observe. They added that he becomes less communicative and more disorganized in larger group interactions.

Communication and Symbolic Behavior Scales

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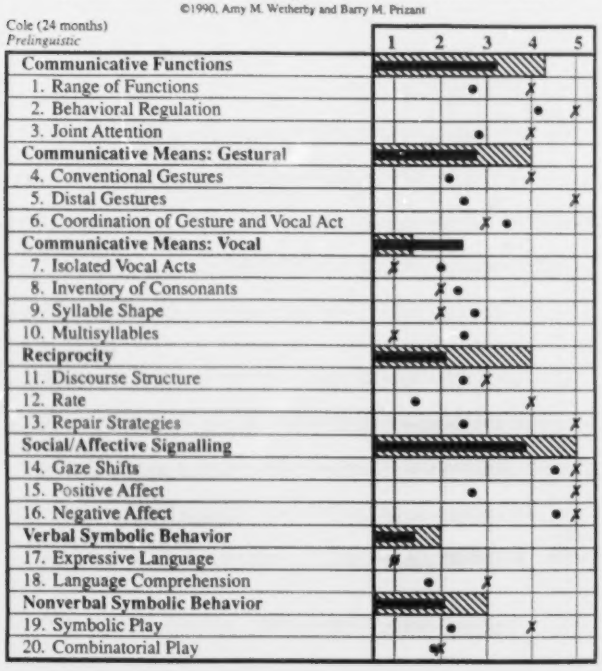

Figure 4: Results on the CSBS *for* Cole, *who presented with a receptive and expressive language delay. He is 24 months of age and is in the prelinguistic stage. The Xs are scores on the 20 individual scales and the unfilled bars with diagonal lines are average cluster scores. The solid circles and bars represent mean scores of 17 normally developing prelinguistic children (9-14 months of age).*

As shown in Figure 4, Cole was more advanced than normally developing children at prelinguistic levels on most scales, with clear limitations in vocal communicative means. His profile was commensurate with children at a single word stage (i.e., 13-18 months), except for limitations in vocal communication and expressive language (not shown). When compared to children at a multiword stage (i.e., 19-24 months), significant weaknesses in vocal communication, expressive language, language comprehension, and combinatorial play are most apparent (not shown). However, Cole clearly demonstrated strengths in all areas related to socioemotional competence in communication and play, including range of communicative functions, variety of conventional gestures, repair strategies, social-affective signaling (all scales), and symbolic play. This profile is indicative of a specific receptive and expressive language delay, with possible mild cognitive delays.

Implications for practice

In their assessment and intervention efforts, professionals working with infants, toddlers and their families are striving to achieve a more integrated perspective on young children's development. Unfortunately, many current assessment approaches still fail to integrate information about communication, language and socioemotional dimensions of development. By using observations of natural communicative interactions to create a profile of a child's strengths and needs, the *CSBS* was designed, in part, to integrate these perspectives.

One major benefit of the *CSBS* is the opportunity it offers for the caregiver and the clinician to observe the child's communication together. Their observations become the basis for a profile of this child's unique communication, symbolic and social-affective abilities. The profile may well contribute to the clinician's early identification and diagnosis of communication and language impairments, but it need not be discussed with parents in technical vocabulary. The opportunity for professionals and caregivers to discuss the implications of their shared observations may be especially valuable in assisting children who demonstrate uneven patterns of development, who may have clearly defined learning strengths, but limitations or weaknesses in aspects of socioemotional development.

The *CSBS* profile of a child's strengths and needs can be useful in designing both the *context* and *content* of intervention programs. An example of context is the degree of structure that a child may need to communicate at his optimal level. The *CSBS* provides information about a child's response to structure: Does he interact more easily when presented with one toy at a time? Does the offer of several toys simultaneously result in disorganization? Intervention contexts, whether at home or at a center, must strike a balance between the use of typical daily routines and modification of context, as needed, to provide the optimal degree of consistency, predictability and adult "scaffolding" necessary to foster successful interactions.

The *CSBS* profile also helps one make decision about the context in which communicative demands are placed on a child. If one wants to focus on communicative signalling, it makes sense to do so in a context in which the child is already strong and thus has energy left over for communication. If Billy is a strong block builder, let block building be the context for encouraging

communication. If Adam needs encouragement to engage in symbolic play at all, he should not be pressed to engage in such play and communicate with others at the same time.

A child's profile of strengths and weaknesses in communicative and symbolic abilities should also be used in decision making regarding the *content* of intervention programs. A child's weaknesses on the communication parameters relative to his/her symbolic development indicate that developing the sophistication of communicative signaling should be a high priority goal in intervention. If social-affective signaling or reciprocity is low, opportunities should be provided to increase social referencing, rate of communication and repair strategies. If the range of communicative functions is limited, opportunities can be provided to expand the range of functions.

For children who show strengths in social-affective signaling, reciprocity and communicative functions, more sophisticated gestural, vocal and verbal communicative means can be targeted. For children showing weaknesses in one or both aspects of play, activities should be planned to provide models and to engage the child in use of objects in play at appropriate developmental levels. Thus, encouraging a child to look at books with an adult increases opportunities for joint attention. Predictable social games like "peek-a-boo" offer opportunities for a child to request continuation of the game. Offering young children toys or food that they probably will not like (along with more desirable items) provides chances for children to choose among alternatives and to communicate rejection and protest.

While the *CSBS* sampling procedures resemble natural adult-child interactions, the focus of this instrument is on profiling a child's strengths and needs. Assessment of developmentally young children should also include a measure of the quality of caregiver-child interactions. Because caregivers are present and participate in the *CSBS* assessment process and may view the videotape at a later time, they are given an opportunity to understand their child's developmental level of functioning and to identify their child's communicative levels and strategies. This experience may be a first step toward improving their own responsiveness to the child.

For further information on the Communication and Symbolic Behavior Scales, *readers may contact Special Press Inc., 11230 West Avenue, Suite 3205, San Antonio, Texas 78213. Phone: 1-800-888-4506.*

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CFC REMINDER:

The National Center for Clinical Infant Programs will be participating in the Fall, 1990 Combined Federal Campaign as a member of the Independent Charities of America (ICA). We wish to thank all federal employees who generously pledged support to NCCIP in the '89 campaign, and to ask all who wish to contribute to NCCIP in this year's campaign to please designate #0241.

Communication Development in the First Two Years of Life: A Transactional Process

by
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Bureau of Child Research, University of Kansas

"Both biological and behavioral evidence . . . support the position that affect *can more appropriately be considered as the major organizing concept for the infant's earliest communication experiences. Through the evolutionary process, the newborn infant is designed to adapt to and participate in a social environment; and the mother's and infant's modes of expression and responding in the social situation can best be depicted as affective rather than cognitive. The success of this original communication network is critical for the infant's survival—which is largely dependent on the infant engaging the mother's attention and involvement in the caretaking of a responsive and comprehensible offspring. In this sense, the infant is a 'born communicator.' "*—Evelyn Thoman, 1981.

"Believe that your child can understand more than he or she can say, and seek, above all, to communicate. To understand and be understood. To keep your minds fixed on the same target. In doing that, you will, without thinking about it, make 100 or maybe 1000 alterations in your speech and action. Do not try to practice them as such. There is no set of rules of how to talk to a child that can even approach what you unconsciously know. If you concentrate on communicating, everything else will follow."—Roger Brown, 1977.

A three-month-old cries and sucks on her hand, several hours after her last feeding. A six-month-old reaches eagerly for a colorful toy that has fallen from his crib. A one-year-old looks at her father and points excitedly at the wind-up train making its way across the kitchen floor. An eighteen month old struggles to open a box of animal crackers and then hands it to his mother, saying "Cookie - open." As any parent knows, all of these responses are examples of early communications—albeit at quite different levels. However, until recently, little was known about the course and sequence of communication skill development in infancy and very early childhood.

In the past, interventionists seeking guidance in the assessment of preverbal children have had to rely primarily on milestone indicators of auditory and vocal development—responses such as: orienting to speech, vocal play, babbling, and vocal imitation. While such responses are observed at predictable points in the development of oral/aural language, they reflect only the development of the child's means for communicating. In the past decade, we have learned a great deal about how communication itself develops during the first two years of life. The purpose of this article is to provide the infant interventionist with a brief overview of both the products and processes that characterize this early period of communication development.

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Communication development as a transactional process.

Prior to the mid 1970's, there were two opposing views on the question of how language develops, reflecting the two extremes in the "nature vs. nurture" controversy that characterized much of the field of child development at that time. Adherents of Skinner's (1957) behavior analytic views occupied the "nurture" pole in this controversy. This behaviorist view held that language is a behavior controlled by antecedent and consequent stimuli like any other behavior and, thus, learned through early experience with linguistic and nonlinguistic stimuli in the young child's environment. At the other extreme, followers of Chomsky's (1957; 1965) writings on transformational grammar argued that the ability to acquire language is a unique and innate human neurological capability. Thus, they adopted the "nature" position, suggesting that language development was a biological, maturational process, little affected by the quality of a child's language learning environment.

In the early 1970's, the sharp edges of this debate were blunted as research involving direct observations of infants and toddlers interacting with their caregivers began to suggest an interplay between the nature and nurture variables. Observations reported by those studying infant development focused our attention on the complex social interactions already occurring between very young infants and their caregivers (e.g., Ainsworth, Bell & Stayton, 1974; Bateson, 1971; Bruner, 1974/1975; Escalona, 1973; Stern, 1974). Related reports by researchers specifically looking at the development of communication skills before speech suggested that these earliest social interactions formed the "cradle of meaning" (Lewis & Freedle, 1972) and represented the first stages in the child's development of communication and later language skills (Bruner, 1975; Dore, 1975; Halliday, 1975).

Concurrent with these emerging data on the nature of early dyadic interactions, and the apparent importance of these to language acquisition, Arnold Sameroff (1975) proposed a **transactional model** of infant development, recognizing the "continual and progressive interplay between the organism and its environment" (p. 281). Such a transactional perspective is particularly productive in our study of early communication development and in the development of communication intervention strategies (McLean & Snyder-McLean, 1978). In the remainder of this article, I will be describing the process of early communication development from a transactional perspective. It is helpful for interventionists, who can deal only with external, observable events, to functionally analyse this transactional process in terms of such events. We must recognize that we can not directly observe most of the organismic variables (e.g., internal state, motivations, aptitudes, etc.) that represent half of the transactional equation. For that matter, many environmental variables that factor into these transactions occur at times and places outside the interventionist's observa-

tions. Thus, for infant interventionists, the theoretical transactional model must be translated into a more operational model, which is illustrated in the figure below. In this operationalization, the infant's observable responses are seen to serve as both the antecedent events that evoke subsequent responses from the environment; and as the consequent events that either reinforce or punish (i.e., increase or decrease the rate of) those subsequent environmental events. Similarly, environmental events, consisting primarily of caregiver responses, also serve dual functions as both antecedent and consequent events, evoking and rewarding (or punishing) the infant's responses. When we intervene with any dyad, it is critical to remain sensitive to these forces of mutual influence, and to recognize that altering either the infant's or the caregiver's responses will have a spiraling effect on subsequent dyadic transactions.

Figure 1

Communication = A Transactional Process

Critical components of communication

In developing communication, the child is actually developing three closely interrelated sets of skills that are all critical to the development of communicative competence. These component skills are: Production, Comprehension and Dyadic/Discourse skills. **Production skills** are those available to the child to express communicative meaning and intent to others. Communication can be produced in many forms and may be intentional or pre-intentional. Thus, production includes expressive language and speech skills, but also includes other, nonverbal forms of communication. Similarly, **comprehension skills** are those available to the child for deriving meaning from communicative and environmental events. Clearly, these include receptive language abilities (i.e., the ability to derive meaning from arbitrary, symbolic forms produced by another person), but also include skills for deriving meaning from non-symbolic events (e.g., facial expressions, tone of voice, gestures, parts of familiar routines.)

Finally, **dyadic/discourse skills** are those which allow us to use our communication appropriately and effectively in communicative interactions with other people. At the prelinguistic level, these include the ability to recognize another person's topic, or referent; to establish one's own topic; to recognize and fill one's turn in the interaction; and to pause and allow the other person to take a turn at appropriate junctures. At linguistic levels, these skills take the form of topic maintenance, topic shifts, presuppositions and appropriate use of polite forms and conventions. A child who has well-developed production and comprehension skills, but who lacks these critical dyadic/discourse skills, will be perceived as deviant and will be identified as having a social or behavioral disability, as well as a communication disorder.

Four stages of early communication development

Between birth and the age of two years, most typically developing infants will progress through four stages of prelinguistic communication development, on their way to becoming language users. Each of these stages is characterized by specific abilities in the production, comprehension and dyadic/discourse aspects of the infant's emerging communication system. Further, at each of these stages, there are unique features of the caregiver-infant transactions that seem critical to communication development. The major characteristics of these four stages are summarized in Figure 2.

Stage I: Reactive Perlocutionary Communication

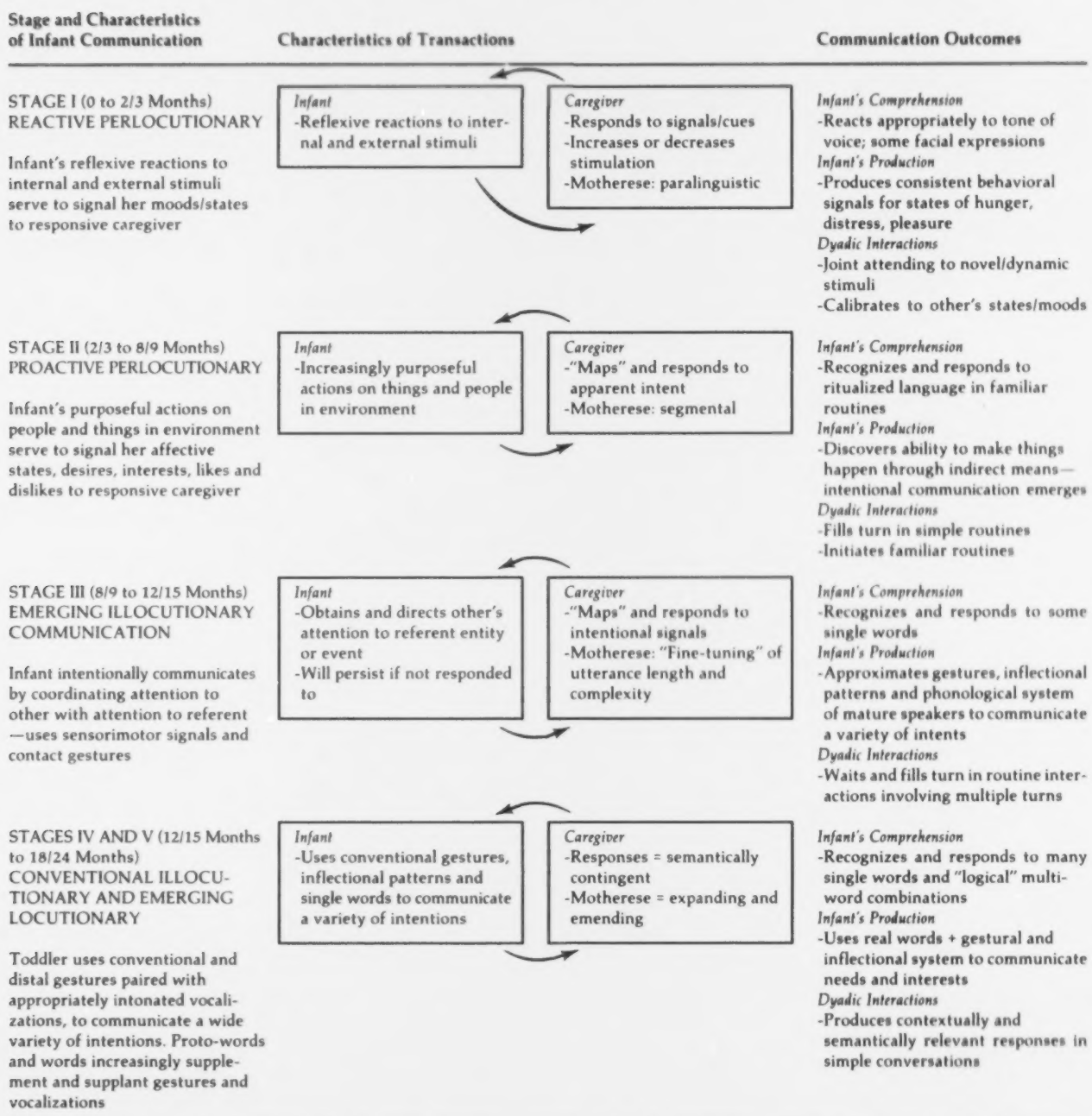
The newborn human infant enters the world with a set of reflexive reactions to certain types of internal and external stimuli. These reactions include responses such as crying in response to a hungry state, attending to novelty in either auditory or visual stimuli, and orienting and tracking both auditory and visual stimuli. As caregivers, we assign meaning to these reflexive responses and allow them to serve as communication signals. Thus, we respond to the newborn who is visually attending and tracking a brightly colored toy held in his line of vision by saying something like, "Oh, you like that! Isn't that pretty!"; and we treat his continued attention as a signal that we should continue the game. When the infant satiates on that stimulus and looks away, the responsive caregiver will respond with "Okay, you're tired of that game, aren't you?", and put the toy away for awhile.

At this first stage of communication development, these reflexive reactions provide the forms of the infant's communication. Although there is no evidence that the infant is aware of the communicative power of his responses at this point, they function as communication because responsive caregivers assign communicative significance to them and respond accordingly. Thus, the infant's communication at this stage can be said to be pre-intentional. The term **perlocutionary,** derived from socio-linguistic theory and referring to the actual effects of a communication act, is used to describe pre-intentional acts that function to have communicative effects (Bates, 1976). (By way of contrast, the term **illocutionary,** referring to the intent underlying the production of a communication act, is used to describe communication that is clearly intended to have some effect on receiver, as will be explained below.)

As noted by Evelyn Thoman, in the quote printed at the start of this article, the content of these earliest communication messages is primarily affective, and

Figure 2

COMMUNICATION DEVELOPMENT FROM BIRTH TO TWO: A TRANSACTIONAL PROCESS


Stage and Characteristics of Infant Communication
Characteristics of Transactions
Communication Outcomes
STAGE I (0 to 2/3 Months)
REACTIVE PERLOCUTIONARY
Infant's reflexive reactions to internal and external stimuli serve to signal her moods/states to responsive caregiver
Infant
-Reflexive reactions to internal and external stimuli
Caregiver
-Responds to signals/cues
-Increases or decreases stimulation
-Motherese: paralinguistic
Infant's Comprehension
-Reacts appropriately to tone of voice; some facial expressions
Infant's Production
-Produces consistent behavioral signals for states of hunger, distress, pleasure
Dyadic Interactions
-Joint attending to novel/dynamic stimuli
-Calibrates to other's states/moods
STAGE II (2/3 to 8/9 Months)
PROACTIVE PERLOCUTIONARY
Infant's purposeful actions on people and things in environment serve to signal her affective states, desires, interests, likes and dislikes to responsive caregiver
Infant
-Increasingly purposeful actions on things and people in environment
Caregiver
-"Maps" and responds to apparent intent
-Motherese: segmental
Infant's Comprehension
-Recognizes and responds to ritualized language in familiar routines
Infant's Production
-Discovers ability to make things happen through indirect means—intentional communication emerges
Dyadic Interactions
-Fills turn in simple routines
-Initiates familiar routines
STAGE III (8/9 to 12/15 Months)
EMERGING ILLOCUTIONARY COMMUNICATION
Infant intentionally communicates by coordinating attention to other with attention to referent —uses sensorimotor signals and contact gestures
Infant
-Obtains and directs other's attention to referent entity or event
-Will persist if not responded to
Caregiver
-"Maps" and responds to intentional signals
-Motherese: "Fine-tuning" of utterance length and complexity
Infant's Comprehension
-Recognizes and responds to some single words
Infant's Production
-Approximates gestures, inflectional patterns and phonological system of mature speakers to communicate a variety of intents
Dyadic Interactions
-Waits and fills turn in routine interactions involving multiple turns
STAGES IV AND V (12/15 Months to 18/24 Months)
CONVENTIONAL ILLOCUTIONARY AND EMERGING LOCUTIONARY
Toddler uses conventional and distal gestures paired with appropriately intonated vocalizations, to communicate a wide variety of intentions. Proto-words and words increasingly supplement and supplant gestures and vocalizations
Infant
-Uses conventional gestures, inflectional patterns and single words to communicate a variety of intentions
Caregiver
-Responses = semantically contingent
-Motherese = expanding and emending
Infant's Comprehension
-Recognizes and responds to many single words and "logical" multi-word combinations
Infant's Production
-Uses real words + gestural and inflectional system to communicate needs and interests
Dyadic Interactions
-Produces contextually and semantically relevant responses in simple conversations

contains little referential or propositional content. The caregiver-infant transactions at this stage are heavily dependent upon the infant's intact reflexive system and the caregiver's responsiveness to the infant's reflexive responses. In these first few months, it is the infant's reflexive crying, grasping, attending and smiling that serve as both the evoking and reinforcing stimuli for the caregiver's own responses. In turn, contingent responding to these signals by the caregiver facilitates the infant's learning about communication, and about the effects his own actions can have upon the others with whom he interacts.

In interacting with very young children, more mature language users tend to adopt a style of speaking that has been referred to as **mother-ese**, and that is characterized by simplifications and exaggerations of typical speech patterns in ways that seem particularly well suited to facilitate the child's task in cracking the

language code of her culture. As indicated in the Roger Brown quote printed at the start of this article, these modifications are made with little awareness by the more mature speakers, who are simply trying to have a successful interaction with the young child. The transactional model explains this phenomenon, since it suggests that the infant's responding (or non-responding) to different adult messages will systematically shape the form of future messages by that adult to the infant. At this earliest stage, infants are not responding differentially to the specific words or grammatical structures of our messages. However, they are sensitive to changes in auditory and visual stimuli. Not surprisingly, then, mother-ese in this earliest stage primarily takes the form of exaggerated intonation and stress patterns in our vocalizations, accompanied by exaggerated facial expressions. Often the content of utterances addressed to very young infants is not even relevant to the affective messages of these early interchanges. We may smile and coo and use wonderful intonation and stress patterns while talking to a one-month-old infant about the killing we made on the stock market today. Clearly, what is important in the speech we address to this Stage I infant are its paralinguistic and extralinguistic features, rather than its linguistic structure and content. These adaptations seem to facilitate the child's attending to and learning about the messages conveyed in the paralinguistic and extralinguistic components of our language system.

In this reactive perlocutionary stage, the infant is already developing important generic communication skills. By the end of this stage, usually around three months, the infant has learned to comprehend the messages conveyed in his culture through tone of voice and some facial expressions. His communication production now consists of a variety of consistent vocal, facial and postural signals that have been responded to in consistent ways by responsive caregivers, Finally, he has already begun to demonstrate the critical, generic dyadic interaction skills essential to any communicative exchange—namely, he is already participating in 'proto-conversations' (Bateson, 1971) and ritualized joint action routines (Burner, 1975) in which he attends to a common focus and alternates turns with another person. Of course, the infant is able to experience these successful dyadic interactions at this stage primarily because the caregiver is responsive to the infant's signals, and typically follows the child's lead. For example, if the infant begins to vocalize while the parent is talking to her, the parent may pause and, when the infant has stopped her vocalization, say something else to the child and then wait for the infant to vocalize again. Further, most caregivers quickly learn to capitalize on the infant's response predispositions in order to establish some common focus for an interaction. For example, having discovered that his infant daughter tends to visually fixate and follow objects that are in a dynamic state (i.e., moving and/or creating sound), a new father may begin an interaction with his daughter by holding his key ring in front of her and shaking it. Her response, which may include visually regarding the keys, smiling and/or vocalizing, will reinforce the father's initiation and he will probably shake the keys again. This very simple exchange will likely be repeated through several turns—until father or daughter satiate on the interaction—and is providing the infant with critical experience in the joint focus and turn-taking pattern that will characterize later conversational interactions.

Stage II: Proactive, Perlocutionary Communication

By three months, most typically developing infants are producing responses to internal and external stimuli that seem less reflexive and more proactive—that is, responses that are volitionally controlled by the infant and that seem purposeful. At this age, the infant is beginning to reach for interesting or desired objects, and to respond predictably to familiar environmental events, like seeing his mother put his bottle in the microwave oven. These more proactive responses serve as communication signals that are somewhat less ambiguous than the reflexive signals produced by younger infants. With increasing sensorimotor development over the next few months, the infant's proactive, but still perlocutionary signals will become more and more explicit. By six or seven months, the infant is engaging in differential actions with objects and people that can serve as communication signals to an attentive caregiver. However, it is important to realize that this perlocutionary infant still demonstrates no awareness or anticipation of the **communicative** effects that his proactive responses can have on other people. For example, a seven-month-old sits on the floor watching a wind-up toy go through its gyrations. When the toy stops, the child picks it up and begins shaking it in an apparent effort to reactivate it. After a few moments of watching these unsuccessful efforts, his mother intervenes, saying "Do you like that? Do you want it to go again?", and then rewinds the toy and sets it back down on the floor. These proactive, perlocutionary signals can be seen to have more propositional content than earlier forms, allowing the child to communicate about external referents, as well as about his own affective states.

Transactions between the Stage II infant and primary caregivers reflect this increasing referential content of the child's own signals. Now, the mother-ese addressed to the child includes many linguistic adaptations. Whereas the suprasegmental features (e.g., phrasing, intonation) were the most noteworthy in utterances addressed to the younger infant, caregivers communicating to this older infant also adapt the segmental features of their utterances (i.e., the actual words and morphemes). In these exchanges, the caregiver's topic is most likely to be something the child is attending to or something that is potentially meaningful to the child; and the words used are typically simple and at the basic category level (e.g., "dog", not "animal" or "Labrador retriever").

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By about nine months of age, the Stage II child has developed a number of important communication skills. He now shows signs of comprehending the message conveyed in highly familiar, ritualized language routine. He responds appropriately to utterances like "Where's Billy's nose?", "Peek-a-boo!", and "Can you wave 'bye-bye'?" His production consists of sensorimotor actions on people and things that are responded to by attentive caregivers. This responding to the **apparent** intent of behaviors produced by the infant has helped him discover that his actions can have predictable effects on other people, and by the end of this stage he is beginning to anticipate these communicative effects of his actions. Finally, through this stage, the child has been developing into a more competent partner in dyadic interactions. By 8 or 9 months, he can initiate and maintain familiar turn-taking routines and is clearly anticipating his partner's responses in these routines.

Stage III: Emerging Illocutionary Communication

Around 9 months, most infants show evidence that they have made the critical discovery that they can use objects to have effects on other people; and can use other people to have effects on objects. Now the child intentionally holds up a block to engage mother's attention and draw her into an interaction and gives the silent music box to father to have it rewound. The feature that distinguishes these communicative signals from those produced by the child at earlier stages is the child's coordination of attention between both the referent of her communication and the person with whom she is communicating. This coordinated object-person orientation is the hallmark of truly intentional or **illocutionary** communication (Bates, 1976, Sugarman-Bell, 1978). We characterize this third stage as one of **emerging** illocutionary communication because the child is still communicating primarily through the same types of sensorimotor actions on people and things that were used in Stage II. However, now these actions are clearly directed toward another person and are often accompanied by evocative vocalizations. The child at this level expects a response to her communicative signals and, with increasing experience, becomes more and more persistent if these signals are not responded to.

Transactions between caregivers and children at the emerging illocutionary level reflect this shift in the child's communication abilities. Thus, at this level, the caregiver is increasingly responding to feedback from the child and begins producing utterances that seem to be 'fine-tuned' to the child's current production and comprehension abilities. This fine tuning provides the child with language models that are minimally discrepant relative to her current abilities, in what Vygotsky has called the "Zone of Proximal Development." Further, at this stage, the caregiver's responses to the child's illocutionary signals often incorporate the appropriate linguistic forms for expressing the child's intentions. For example, when the emerging illocutionary infant looks at her father and then reaches out towards the bowl of cereal from which he is feeding her, he is likely to respond to her signal by giving her some more cereal while verbally confirming her message, "You want *more cereal?* Mmmm good! Here's some *more cereal* for you."

By her first birthday, the typically developing child has been producing illocutionary communication for several months and has added several new communication skills to her growing repertoire. By the end of this stage, she is clearly understanding a number of actual words—typically those words that she has heard frequently in the context of familiar, routine events. Now, however, she can demonstrate that she knows the referent for these early receptive words even when

they are produced out of the usual context in which she has learned them—she can point to "shoe" while eating in her high chair, and hold up a "spoon" when she is playing in her bedroom. Her production skills now include the ability to produce communicative signals that are increasingly conventional and include a variety of contact gestures—that is, gestures like showing or touching-to-indicate—in which she physically contacts the referent and/or receiver of her communication. With these more conventional and intentional signals, she can communicate a greater variety of meanings: she can hold up an unknown object, look to her mother and vocalize with rising inflection to request information about the object; and she can grasp a sealed package of crackers at the restaurant and give it to her father with an insistent vocalization that clearly requests help in opening the package. Finally, dyadic interactions with the child at this stage are longer and seem more fluent, as the child anticipates her turn and takes more turns on the same "topic" than she did in interactions at earlier stages.

Stage IV: Conventional Illocutionary and Emerging Locutionary Communication During his second year, the normally developing child will progress from prelinguistic to linguistic communication. Early in this transitional stage, the child's still illocutionary communication signals are becoming more conventionalized and distanced from both the referent and the receiver of the communication act. Now the child can request items by producing a highly conventionalized, open palm request gesture without actually touching or reaching for the object he is requesting. He can direct a receiver's attention to some interesting object or event by simply pointing at it, even if the referent is located some distance from the child. Further, the vocalizations accompanying these conventional gestures are appropriately intonated and often have sentence-like phrasing. When interacting with this Stage IV child, we often have the impression that the child is actually speaking in words and sentences, because his vocalizations are conveyed within the "prosodic envelope" (Berry, 1980) of his culture's conversational speech. Gradually, these word-like vocalizations are supplemented and supplanted by proto-words (sound patterns that are used consistently by the child to request or comment on specific referents—e.g., "ba-ba" to request his bottle) and true, conventional words. Some children will begin producing words shortly after their first birthday, while others will communicate with conventional gestures and intonated vocalizations well into their second year. By two years, however, the typically developing child has entered the locutionary (linguistic) stage, and is using a number of real words, in addition to all of his gestures and vocalizations, to communicate very effectively with the people in his ever expanding world.

Transactions between caregivers and children at this fourth stage of communication development increasingly take the form of true conversations. Now the caregiver's contingent responses are evoked and reinforced by the child's own conventional communication signals and utterances. These caregiver responses are now semantically contingent, building upon the topic of the child's previous communication act. Further, as the child begins to produce linguistic forms, the caregiver will incorporate expansions and emendations of these forms into her responses. For example, when this child points to the family car and says "wide", his mother is likely to respond with, "ride? Yes, we *ride* in the *car*". In her response, she has confirmed the message of her child's communication act and, at the same time, she has both amended its form, modeling the correct pronunciation of *ride*, and expanded it into a complete phrase, *ride in the car*. In such transactions, the child is receiving immediately relevant and useful information about this culture's language conventions for talking about the referent and intention that he is trying to communicate. The success of this natural language learning process for the vast majority of children suggests that this is a very effective way to deliver information about our language system to those who are just acquiring it.

The two-year-old, then, is a very competent communicator. He now comprehends a large number of spoken words, both singly and when these are embedded in familiar phrases (e.g., "Can you show me your _____?"; "Put your _____ in here"; etc.) Of course, he is also deriving critical meaning from contextual, gestural and intonational cues that accompany these utterances. Similarly, the child's production is now increasingly in the form of spoken language, but this continues to be supplemented with gestures and supported by the inflectional patterns of his verbalizations. Finally, the two-year-old's dyadic interaction skills are beginning to evolve into true discourse skills. Turn taking now includes the production of adjacent utterances in dialogue contexts; and common focus now assures a common topic for conversation. It is important to note that the comprehension, production and dyadic skills developed at earlier stages continue to be important components of the child's communication system at this stage, and in all later stages of more mature language use. As adults, we still rely heavily on extra-linguistic and paralinguistic information to determine the full meaning of spoken language addressed to us; we still use conventional gestures and inflectional patterns to supplement our own spoken communication; and we still require the basic dyadic interaction features of common focus and turn-taking in any conversational exchange.

Clinical implications

The most obvious clinical implication of our new information about communication development in the first two years of life is that it is never too early to start monitoring this aspect of development. The transactional perspective specifically suggests that intervention should be provided as soon as any delay or disorder is detected in either the infant's or the caregiver's responding within the communicative dyad.

Without intervention, a problem affecting one member of the dyad will soon be multiplied and result in a dyad that appears "dysfunctional" when observed by the clinician. For example, an infant with even mild neurological involvement who produces perlocutionary signals that are ambiguous, or who fails to respond to the caregiver's efforts to establish a common focus for dyadic interaction, will fail to provide the evoking and reinforcing stimuli needed to maintain that caregiver's facilitating responses. Similarly, a caregiver who is unresponsive to the infant's perlocutionary signals will fail to provide the evoking and reinforcing stimuli needed to maintain the child's communication behaviors and to shape these into increasingly intentional and conventional forms. Thus, it seems imperative that a communication disorder specialist, usually a Speech-Language Pathologist, be part of the inter- or trans-disciplinary team providing assessment and intervention services for any infant identified as at risk for developmental delay or disability.

There are a number of more specific implications of the transactional model for the design and delivery of appropriate intervention services for infants and toddlers. Most obviously, this suggests that intervention must focus on the dyad as a functional unit, and not just on the child. Further, this model, and the detailed information now available on the course and sequence of communication development before the emergence of language, provides guidance for the design of appropriate assessment and intervention procedures. The following reference list includes references for a number of clinical intervention and assessment procedures that are specifically designed to address prelinguistic communication delays or disorders with dyads of caregivers and their very young children.

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An Intensive Approach to a Toddler with Emotional, Motor, and Language Delays: A Case Report

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One way to understand the relationship between emotional development and development in the sensory, motor and language domains is to look at the processes that go on between infants and parents. I have postulated four processes as essential for healthy emotional and social development. In an article in *Zero to Three* two years ago (September, 1988), I discussed these processes with particular relation to motor development. They are even more closely related to speech, language, and communication in the broadest sense. The case report that follows will illustrate an intensive approach to the treatment of infants and toddlers with multiple handicaps. Our approach is designed to involve children and parents in all four interactional processes, and to emphasize interactive relationships, with the child taking the lead.

Four essential processes

Attention and engagement constitute the first core process. Attention and engagement mean face-to-face contact, a sense of connectedness, and shared attention between the infant and another person, in a context of warm, pleasurable or loving feelings. It is critical in the early months of life for a baby to be able to decode information from his senses and to find the world interesting, reassuring and pleasurable. Processing auditory input from mother or father involves determining their affective tone; it is part of the formation of the early parent-child relationship. Experience with speech and language is thus integral to the infant's early sense of trust, intimacy, and connectedness to the world.

Establishing intentionality and two-way communication is the second core process. This involves the reciprocity and give and take of information that we see when the eight-month-old reaches out, hands a toy to mother or father, and gets it back. Two-way communication develops into an organized gestural system. The most basic emotional messages of life, dealing with safety vs. danger, acceptance vs. rejection, approval vs. disapproval, respect vs. disrespect for uniqueness, and support and pride in, vs. undermining of, an evolving sense of self, are communicated back and forth between child and caregiver through movements and movement patterns, gesture, facial expression, vocal tone and rhythm, and combinations of these.

Sharing of meaning constitutes the third core process essential for health emotional development. Between 18 and 24 months, typically developing children begin to use words, symbolic gestures and pretend play to communicate their intentions—"Give me that;" "I want that." To share meanings, one needs to be able to form and use verbal symbols, to initiate the flow of information. Abstracting and using symbols are essential to the development of such basic elements of the personality as imagination; creativity; the emerging sense of oneself and another person as whole human beings; and, not the least important, self-awareness, including the ability to recognize one's own wishes and intentions.

Categorizing meanings is the fourth process that is critical for healthy emotional development. Distinguishing between make-believe and reality, between what I do now and what I'll do in the future, between me and not me, real and not real, here and there, all depends on a higher level language ability. At this level the child must not only be able to organize verbal symbols but also to form classes of verbal symbols, and to see the relationships between these classes. These are the among the skills important for "school readiness." These are also the skills that are the foundation of basic personality functions (ego functions) such as reality testing, impulse control, positive self-esteem, a stable mood, and the capacity to focus and concentrate.

The price of failure

The failure to negotiate any of these four processes successfully may be associated with severe psychopathology. A child who cannot engage and attend with another, because he has not been able, beginning with the early months of life, to feel reassurance and some pleasure in being close and sharing information, may be aloof, avoidant. At the extreme, he may begin to look autistic-like if circumstances do not improve. The child who can't engage in two-way communication early on does not, then, learn cause and effect or develop a sense of his own intentionality through this process. He may become aimless, fragmented or labile in his emotions and/or behavior.

The child who cannot communicate shared meaning, who cannot symbolize his emotions through pretend play, more sophisticated gestures, or words, may not be able to be symbolically aware of or to label feelings. Consequently, he may express emotions concretely, through chaotic behavior, biting, or kicking. The child who can't learn to categorize experience or see connections between ideas because he can't use symbols in his own communications may lack the basis for separating reality from fantasy and developing an internal, reasoned approach to impulse control. He won't be able to say to himself, "I don't want to do that because it will hurt someone."

Thus, successful negotiation of early stages in communication is essential not just for emotional health, but also for prevention of severe psychopathology. When we argue for an intensive treatment approach for children with combinations of emotional, motor and language delays we do so with the strong conviction that nothing less will pull these children into the interactive relationships they desperately need.

Two years with Steven

When Steven's parents, Mr. and Mrs. D., brought him to us, he was 17 months old. He had been a preterm, low birthweight infant and had a history of moderate cerebral palsy with severe involvement of the lower extremities, lesser involvement of the upper extremities (increased muscle tone). During his first year, he had seemed primarily despondent and aimless to his parents. His gentle, gifted mother was able to get him to respond a bit to touch, but there was very little two-way communication through interactive vocalizations, eye contact, or facial expressions. When I first saw Steven, his language and cognitive development were at about the 6-8 month level. His aimlessness was increasing, causing his parents and professionals who had seen him to be concerned about autistic features or severe pervasive developmental disorder.

Our work with children like Steven and their families often involves two or more weekly sessions with the speech pathologist; one or more weekly occupational therapy sessions; two to five sessions weekly with a skilled clinician/play therapist to work with the child and with child and parents together on interactive skills; and counseling with parents to help them facilitate the processes of shared attention and engagement, two-way communication, shared meanings, and categorization of experience. Sessions with a special educator and, for pre-schoolers, an integrated educational program that addresses their cognitive, physical, and socioemotional needs are often indicated.

Initially, Mrs. D. was extremely caring and understandably worried about Steven, and therefore very protective toward him. She used a great deal of gentle touch to interact with him, but was less involved in working with his interactive gesturing. Mr. D., a very successful, "take-charge" person, communicated his deep love for Steven with demands and, at times, an impatient and intrusive approach. He would hold the toddler by the arm, demanding, "Look at me, say something to me." Mr. D. was worried about the possibility that Steven would be retarded or autistic.

Our first goal was to help Steven's parents learn how to achieve a state of shared attention and engagement with Steven. Mrs. D. worked trying to get his attention through visual contact and gestures. Approximately a month and a half into our work, Mr. D. learned to see that whenever he spoke too loudly or moved in intrusively, Steven would turn away and try to crawl in the other direction. Once Mr. D. recognized this, he began to modulate his voice. Interestingly, because Steven was sensitive to high-pitched sounds, he liked his father's low voice, and they became very comfortable with each other. Mother became increasingly skilled at adding a variety of gestures to her already sensitive style of approach.

Some two and a half to three months into the work, we had our first two-way communication—what I call "closing the circle." A circle is closed when a child initiates some communication, the parent responds, and the child digests the response and builds on it. This experience introduces the child to the notion that he can have an impact on the world, that the world makes sense. The first "circle" may be the hardest to close, but it's worth trying for.

During one therapeutic session, Steven's behavior was aimless, but as he was crawling he began to turn a wheel on an office chair. Mr. D. was trying to tune in to Steven and to avoid intrusion. I suggested to him that he turn the wheel in the other direction. Mr. D. did this; Steven turned the wheel back again—we were off and cooking. That first "circle" led to many additional ones.

By about six months into the work, we were up to closing two circles in a sequence, and were also addressing the issue of perseveration. Steven would often roll a toy car back and forth to his father over and over again, or open and close a door repeatedly. Understandably, adults often respond to perseveration by trying to distract a child or ordering him to stop his behavior. I feel that such a response is just a one-way communication, the kind of behavior we are trying to discourage in child or adult. We tried instead to create circumstances in which the perseveration itself would become the basis for interaction. So if Steven was rolling the toy car in a perseverative way, Mr. D.'s hand became a bump in the road, and Steven had to get over the hand. As he was struggling to do this, and even got annoyed at the obstacle, Steven was closing some circles. If he was pushing a door back and forth, Mrs. D. would get on the other side of the door and offer resistance, or start a dialogue around the door. By making every perseveration the occasion for interaction, we capitalized on Steven's motivation to engage in repetitive activity but made it more fun for him, a little more interesting, and, most important, interactive. We did this gradually, and reached "three circle" sequences of interaction.

Around this time, a language spurt occurred. Suddenly Steven began imitating everything his parents said. This stage is typical in normally developing children, and we are wondering whether getting children with disabilities "hooked" into communication at the preverbal, gestural level may provide a necessary foundation for an imitative language spurt. At this point, Steven told his first joke. A cream-filled candy bear had splattered against the wall. Steven said, "Poor bear!" and giggled.

As we now begin to see elements of shared meanings emerge, and the use of more symbols in an organized, purposeful way, we tried to build on this process. If Steven said, "Juice," his mother would ask, "How much?" He would say "More;" Mrs. D. would ask, "How much more?" and he would have to indicate with his hands a little more or a lot more. We always encouraged closing more circles, expanding his communication, sometimes pretending not to understand in order to entice Steven to point and use a word.

When Steven was about three years old, he jumped to putting two ideas together. When his infant brother bumped himself one day, Steven, highly motivated to express his concern, said "Jay hurt his head. Help him."

At this time, 18 months into the work, we saw that Steven needed to learn to shift gears between the fantasy play of dolls and cars and "reality chit-chat," like describing what he wanted to eat. We worked on both fronts at once. Although Steven was expanding his communication with his parents, he couldn't do this with peers. His behavior would become aimless when children his age were around.

We began a very intensive program of bringing peers into Steven's home. I suggested that Mr. and Mrs. D. begin gradually, but work up to having children visit three or four times a week. The parents were reluctant: it's hard to find children who want to play with a child with a motor delay, easier to play with the child oneself, now that one has become skilled at this. But once a child like Steven has gained the ability to sequence ideas together and to communicate, he needs to work things out in the "real world."

Steven's course was slow, but the approach worked. He was able to start relating to other children and took a great interest in them. Now, in a mainstreamed preschool setting, he is able to do complicated "fourth level" categorizing of information and comparing ideas. Of his brother he now says, "Put the baby in the closet. He cries too much!"

Steven is also beginning to handle what, when and who questions. For example, in pretend play Mr. D. asked, "What happened to the car?" Steven replied, "The car is broken." "What's broken?" "The brakes." "What should we do about it?" "Let's take it to be fixed." During a recent visit that Mr. D. and I made to Steven's school, Steven turned as we walked in and said, "Hi, Dad." He turned to the little girl sitting next to him at a table and said, "I'm going to Liz's house today." Mr. D. asked, "What are you going to do there?" With a big smile, Steven answered, "We're going to eat." I watched Steven navigate purposefully around the room, joining various groups of children.

Our current challenge involves helping Steven move from what is sometimes a passive, concrete approach to problem solving to a greater ability to think on his feet and direct his own communication drama. To do this, we have to avoid over-directing him, because when we do, we are using one-way gestural communication rather than creating opportunities for two-way communication. In playing with puzzles, for example, when Steven looks confused we want to avoid the temptation to say, "You can turn the piece this way or that way." Saying, "Gee, I'm not sure how this shape goes," puts the onus back on Steven.

This approach seems to be working. With the support and assistance of his parents, Steven has learned not only to take the initiative but even to challenge them. (They have mixed feelings about his coming home from school and saying, "I want to have Joshua over to play, not Sam"). Occasionally, in his regular classroom, Steven gets into a verbal tussle with another child, arguing over who is going to be the boss of the pretend play of the moment. At the same time, Steven retains his warmth and gentleness and is developing a nice sense of humor. Most important, Steven has and conveys a sense of inner joy, purpose, and spontaneity, rather than the mechanical, rigid quality one sometimes sees in children with uneven development.

Discussion

As we work with children like Steven, we must remember that parents as well as clinicians will be tempted to concentrate on teaching "splinter skills"—using personal pronouns properly, saying the alphabet, identifying colors. One must remember that a child who doesn't yet know how to relate or to interact gesturally needs first to achieve these more fundamental skills. In our experience, what keeps children with severe communication problems looking mechanical, perseverative, and unnatural is their failure to master presymbolic aspects of communication and social and emotional development. Once a child has all relationship capacity and the gestural competence of a typically developing 18-month-old, symbolic elements will follow naturally. Also, once the relationship capacity and gestural system are in place, the child will be able to interact and negotiate effectively as he masters symbolic processes.

Sometimes, with the best of intentions, parents copy what they observe early interventionists doing—e.g., working on a particular skill. Therefore it is critical for professionals to spend the time and effort to incorporate their specific techniques into spontaneous interactive sequences. Professionals need also to help parents understand and learn how to read and respond to the child's spontaneous cues. Specific techniques and approaches can then be incorporated into natural, pleasurable interaction.

Specific skills are useful to a child only when he realizes that they are, indeed, tools at his disposal, to use in mastering the environment as he sees fit. When a child is treated as the passive recipient of information, he is learning primarily to be passive and reactive, whatever specific skills he may be gaining. But when a child is inwardly motivated to explore and act upon the environment, when he learns through the reactions of other people and his interactions with them, then he is truly learning how to organize his world.

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A Nonverbal Intervention for the Severely Language Disordered Young Child: An Intensive Approach

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Daily life, regrettably, is often full of "talk" but bereft of communication. What language disordered young children need is help in communicating—not simply in talking. Indeed, these children may have more trouble with the social communication features of language than with words or speech. Thus when we are designing therapeutic approaches for language disordered young children, we need to focus on the normal coordination of communication skill across three developmental pathways: motor, social-emotional, and language-cognitive.

Especially when we work with young children, we must remember that nonverbal signals—gestures, eye movements and facial expressions—are crucial to early communicational exchange. Ricks and Wing (1975) have observed that severely language disordered children are limited in the use of nonverbal, as well as verbal communication. Nonspeech skills can often emerge through intensive nonverbal intervention that includes, but is not limited to, the use of dance movement therapy. The case study that follows examines the effectiveness of a dance-movement therapy intervention conducted over a two-year period with one severely language disordered young child. He was, and remains, enrolled in a therapeutic nursery for young language disordered children.

Why use dance-movement therapy with the language disordered child?

Dance-movement therapy is the use of movement as a primary modality to enhance cognitive, emotional or social development. In the treatment of children with language disorders, movement is used to develop social communication skills. When the child can recognize and respond appropriately to the nonverbal signals that accompany language, meaningful verbal interaction is more likely to follow.

Dance-movement therapy is rooted in two theoretical models: developmental and psychodynamic. Principles of growth and maturation guide developmental treatment, directed to remediating specific developmental deficits to stimulate more functional patterns of movement and behavior. A psychodynamic focus, on the other hand, emphasizes the emotional and social aspects of communication and interaction (Whitehouse, 1979). To address both the developmental and social deficits characteristic of language disorders, it becomes useful to synthesize these two approaches.

A third theoretical model often applied in dance-movement therapy is Jerome Bruner's social/pragmatic theory (1975). Bruner suggests that children learn to communicate by observing how others respond to their communication-like behaviors. For example, if a child points to a spoon and a parent then gives the spoon to the child, and this pattern is repeated consistently, the child comes to understand that pointing at a spoon results in being given a spoon—this connection will be made whether or not the child originally pointed at the spoon because she wanted it.

In a society that emphasizes the development of verbal skills in early childhood, early childhood practitioners may underestimate the connection between non-verbal behavior and the development of these verbal skills (Espenak, 1981). Before children are able to utter a single word, they experience, express, and perceive emotions and ideas through the use of bodily movement and gesture.

Children who exhibit syndromes associated with language disorder may withdraw; present a constellation of bizarre, highly stylized and idiosyncratic mannerisms; and seem to live in an intensely personal world cut off from normal means of communication. The dance-movement therapist uses the child's symptoms themselves to draw the child into a therapeutic relationship. Frequently she imitates the child's movements, to establish rapport with his "movement language." She moves with the child, joins his movements, and explores space, distance, nearness, and direction in harmony with the child. She chooses to shape the child's socially inappropriate behavior so that eventually the child can use this behavior to initiate socially appropriate communication.

Children learn how to request, protest, call attention, and regulate the behavior of other people in part through the responses of others. Some of the communication failures of language disordered children may arise from the difficulty they have picking up social cues. Normally, children learn from the responses of others that talking loudly, laughing, giggling, or masturbation is tolerated in certain contexts but not others. Language disordered children, in contrast, flip their fingers, rock, and talk nonsense despite clear signs of social disapproval. By accepting the language disordered child's movements, whatever they are, as appropriate, and by responding to them in a reciprocal fashion, the dance movement therapist gives meaning to the child's gestures. If the child is rocking, the therapist rocks with the child. She may rock beside, in front of, or behind him. She may hold hands with the child while both rock. She may add music—the rocking becomes a dance. In other words, the child's once totally self-absorbed behavior is imbued by the therapist with communicative intent.

Alex

When Alex S. was 18 months old, a licensed clinical psychologist diagnosed him as having infantile autism, a severe language disorder. At that time Alex began

play therapy, a psychological intervention. However, his parents were dissatisfied with this approach and searched for an alternate treatment. At 2 years 5 months, Alex was referred by a neurologist to the School for Language and Communication Development for an initial speech/language evaluation. Alex was accompanied to this evaluation by his mother, a registered nurse, and his father, a physician.

Alex's mother reported that he was the result of an unremarkable second pregnancy culminating in a delivery by cesarean section due to "failure to progress" in labor. Mrs. S.'s first pregnancy had terminated in miscarriage. Alex had contracted chicken pox at 6 weeks of age, and during his first year had had two ear infections, which responded to antibiotic treatment. He sat at seven months, crawled at nine months and walked at 18 months. He was not yet toilet trained at the time of this interview.

Alex responded to sound at one month and started to babble at five. At nine months, Alex began to pay attention to music and to respond by vocalizing. By 12 months, Alex was reported to hand toys to his mother when requested. By 18 months he would vocalize in specific repetitive patterns during solitary play, but as yet had used no real words. Alex began using single word utterances at 26 months, shortly before he came to us.

As Dr. and Mrs. S. were talking with the interviewer, Alex responded to his name several times by turning his head in the direction of the speaker. This behavior suggested that he could hear language presented at the level of conversational speech. A complete audiological evaluation conducted subsequent to this interview indicated that Alex's hearing was within normal range.

Language evaluation

Alex came willingly to the diagnostic room with his parents but was unavailable for formal diagnostic language procedure. He would not sit and look at pictures with the examiner, listen to stories, or engage in any conversation with the examiner. Observing Alex during play gave the examiner some sense of his language functioning. She was also able to administer the Receptive-Expressive Language Emergent Scale (the REEL, 1971), a parent report instrument that helped to interpret some of the play in which Alex was engaged during the evaluation.

Throughout the evaluation, Alex would look directly at objects but not at people. He communicated by using gestures and vocalizations, such as pointing to a blue ball and saying "bou-bou." Although Alex's vocalizations during the evaluation session were entirely nonlinguistic, his parents said that at home he used gestures and single words, such as "kay-kay," "ju," and "bubbie," to get his parents to give cookies or juice and to blow up balloons, a favorite activity.

Cognitively, Alex demonstrated knowledge of object permanence by looking for a ball that had been hidden, and exhibited problem solving skills by reconstructing a stack of rings. He did not engage in any representational or symbolic play during the evaluation. He was able to code and demonstrated the spatial concepts of "in," "on," and "under." When asked to place a ring in a large box, Alex complied, as he did when requested to sit on a chair and crawl under his mother's legs. When the examiner asked him to give her a ball, he did not respond, but his parents said that at home Alex would comply with similar requests.

The examiner described Alex as a child with a severe comprehension and production language disorder of unknown etiology characterized by a limited sound production and a primarily gestural means of communication. Alex's intellectual development seemed far ahead of his social skill. The examiner felt that Alex could be helped by an experience in SLCD's therapeutic nursery and also recommended a complete dance-movement therapy evaluation, to ascertain Alex's need for this kind of individual therapy.

Dance-movement therapy evaluation

One month after the speech and language assessment of Alex, SLCD's dance-movement therapist observed Alex during several unstructured play activities. Her observations added a new dimension to the speech and language evaluation, especially concerning the impact of physical mobility upon social communication.

The dance-movement therapist described Alex as a child with severe social difficulties. He did not respond to verbal requests, communication was poor, and he did not talk at all. The examiner observed some nonverbal cues, such as eye contact and gesturing, but these were infrequent and often inappropriate. Alex's body was extremely tense during the evaluation, as evidenced by unusual stiffness in his hands and arms. This stiffness appeared to interfere with his movement in and around objects and people. Without the natural arm swing essential to walking, Alex's equilibrium seemed disturbed; he frequently bumped into the examiner and into objects in the room. Alex did not respond to his mirror image and was unable to identify parts of his body for the therapist.

With the initial goal of increasing Alex's body awareness and reducing body tension in the service of communication, the examiner recommended beginning individual dance-movement therapy for Alex twice a week.

First six months of treatment

Alex was wait-listed for the SLCD program and accepted two months later, when he was 2 years 8 months of age. He was placed in a classroom with five other language impaired children that was staffed by a certified speech language pathologist and two teaching aides. He attended the nursery five days each week for three hours each day. In addition, Alex began individual dance-movement therapy twice a week with the same therapist who had conducted his dance-movement evaluation.

At the same time, Alex's parents were involved in a comprehensive parent education and peer support program at SLCD. They were receptive and responsible

in communicating with Alex's teachers and therapist. At home, they implemented therapy techniques such as "narrating" many of the activities in which Alex engaged. For example, if Alex threw pillows, Dr. S. would say, "Alex is throwing pillows."

Nonetheless, Alex made little progress during the next six months. In the classroom he only explored objects, at a level that remained unchanged from earlier observations. In dance-movement therapy, Alex remained fixated on exploring bubbles. He refused to engage in any other activity.

Six months into treatment, a transdisciplinary team of professionals from SLCD met to discuss Alex and other children who had made limited progress in the SLCD program, and to consider possible intervention alternatives. As the assistant director of the program, I chaired those meetings and consolidated recommendations.

The team reviewed a videotape of Alex, then 3 years, 2 months, in a small group with his therapist, his classroom aide, and two classmates. We noted Alex's lack of interaction, eye contact, vocalization, gesture, or proximity, and his inappropriate facial expression. Alex's lack of responsiveness could almost be called contagious. On the tape we could see both adults and children directing their attention to everyone except the self-absorbed Alex. Another way of describing what we were seeing would be to say that after a period of six months the non-interactive Alex had shaped his environment to be non-interactive as well.

A new approach

After the team reviewed a number of similar tapes and Alex's parents had made informal observations of these same tapes, the following intervention approach was proposed to Dr.and Mrs S., with dance-movement therapy as the primary vehicle. In addition to continuing in the therapeutic nursery, Alex would be involved both in individual dance-movement therapy and dyadic (two children) dance-movement therapy. We believe that children build a foundation for social expression on early movement patterns without a verbal component. We also felt that the dyad, as the primary social unit of communication, could best facilitate functional nonverbal communication. Thus, during the individual sessions with Alex the therapist would facilitate adult-child nonverbal interactions. In the dyadic sessions, the therapist would facilitate nonverbal interaction between the two children. We hypothesized that once these nonverbal concomitants of spoken language were in place, functional speech would follow.

Our plan was to offer Alex three dance-movement therapy sessions per week for the next year. Each session would be 30 minutes long. One session would be individual, two dyadic. The same dance-movement therapist would conduct all three sessions. (For Alex this meant a change in therapists, as his initial therapist was leaving SLCD for a new position). Alex's partner in the dyadic sessions would be a classmate from the nursery with a communication disorder quite different from Alex's. This child was selected as Alex's partner because his communicative behavior was intrusive and demanding. Alex would have difficulty avoiding paying attention to him.

The initial goal of this new strategy was a simple, direct one: to increase both the frequency and duration of nonverbal interactional behavior. The team did not suggest specific activities or materials to the therapist. Quite naturally, play activities involving climbing and sliding on platforms and crawling in and out of tunnels in "peek-a-boo" style evolved in the individual and dyadic dance-movement sessions. The dance-movement therapist was able to translate interactions observed in her individual sessions with Alex directly to the dyadic work. For example, if she played peek-a-boo one on one, she reinforced and repeated this kind of non-verbal interaction with the dyad. Due to the severity of Alex's communication disorder, even the small group setting of the therapeutic nursery was still too complex socially to allow him to initiate these interactions there.

After three months of combined dance-movement therapy, Alex began to look at people, tolerate people being physically close to him, increase his communicative behavior and vocalizations, and use single words, like "ball" and "up," frequently to express his desires.

During the second three months of combined intervention, Alex experienced a tremendous leap in development. At three and a half years, he was able to establish and maintain eye contact during interpersonal exchanges and participate in nonverbal turntaking routines, like waiting for his turn to use bubbles. He used sounds, gestures and words with some consistency to make requests, call attention and protest. Occasionally Alex would respond appropriately in words to "what" and "who" questions. With adults, he was also responding more appropriately to yes/no questions.

During the ensuing four months, Alex continued to progress, although more gradually. Although most of his interaction with his partner in the dyadic sessions could be described as parallel play, he was beginning to request clay and crayons from his partner by extending his hand and saying "cay" or "cayon."

At the conclusion of his second year of combined therapy, Alex continues to be severely impaired in both the comprehension and production of language. Alex still needs intensive support from adults to participate consistently in play and other activities with children. Yet expectations for him are vastly different than would be the case if he still carried the diagnosis of infantile autism. The members of the SLCD transdisciplinary team recommend continuation of his therapeutic special education placement as well as dyadic dance-movement therapy, to translate the gains he has made in adult-child interaction to communication with other children.

Discussion

Child development researchers have suggested that children with disabilities may fail to develop fully not because of the disability itself but because of the failure of the environment to provide appropriate experiences and special patterns of care (Greenspan, 1988).

The child with a communication disorder cannot be expected to develop language through normal facilitating experiences that most parents and caregivers provide. The child with a language disorder needs a special level of social interaction experiences, both at the non-verbal and verbal levels, to develop appropriate communication skills. The ordinary preverbal social exchanges that parents provide for their young children (e.g., rocking back and forth while singing, "catch-me, catch-me" games, tickling toes, "peek-a-boo," jumping on the bed, hide and seek) serve most children well. But language disordered children cannot absorb these learning experiences "incidentally." Rather, these experiences need to be presented directly to the language disordered child as a kind of instruction. By reinforcing and repeating these early nonverbal developmental games, the dance-movement therapist sets the occasion for interaction. She does deliberately what the sensitive parent of a typically developing infant does casually, almost instinctively.

Conclusion

Communication is the major goal in dance-movement therapy. Since all communication, whether verbal or gestural, is directed toward someone, movement can have, among its other aims, the goal of making contact with another human being. One of the major functions of dance, historically, has been to create unity among people. We need to recognize the relationship-maintaining function of language. We cannot and should not isolate verbal from nonverbal experience. When we realize that children may benefit from learning to use the language of movement to establish human contact before they are ready to establish contact through words, we can use dance and movement to help children like Alex to communicate, and to connect.

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ASHA Sponsors Training Related to Infants, Toddlers, and Their Families

The American Speech-Language-Hearing Association (ASHA) is undertaking two national training initiatives related to practice with infants, toddlers and their families.

ASHA's Infant Project, supported by a 3-year grant from the Division of Personnel Preparation, OSEP, U.S. Department of Education, is designed to enable each state to send an interdisiciplinary team of early intervention professionals and parents to participate in a 12-day training of trainers institute. The state teams will return to their states to train additional interdisciplinary teams.

The first institute was held this summer in Washington, D.C., with nine states participating. Additional institutes are scheduled for January and July/August 1991. Each 12-day institute focuses on family-centered services, systems, and values; infant and toddler assessment; early intervention services; interdisciplinary team approaches; and service coordination/case management. The institute format emphasizes trainer techniques, including skills necessary to design, implement, and evaluate adult education activities.

ASHA's Infant Project represents a cooperative effort among major professional associations, including the American Occupational Therapy Association the American Physical Therapy Association, the National Association of State Directors of Special Education, the Council for Exceptional Children, and the Parent Educational Advocacy Training Center. The project also involves close collaboration with P.L. 99-457 lead agencies in each state, which are responsible for: 1) identifying and nominating state team members; 2) developing a state training plan around which the state team will conduct ongoing interdisciplinary training events; and 3) providing support for the state's portion of the costs of team participation in the training institute and the ongoing training events.

October, 1990 will see the beginning of a three-year inservice training effort targeted at speech-language pathologists and audiologists across the country. In ASHA's new project, funded by the Handicapped Children's Early Education Program (HCEEP) of the U.S. Department of Education, six nationally recognized authorities in speech-language pathology and audiology will develop a series of concentrated inservice workshops on the assessment and treatment of communication disorders among infants and toddlers, with emphasis on a family-centered approach. Full-day workshops will be presented in conjunction with state Speech-Language-Hearing Association meetings.

Leadership development will be an important component of the project. In the second year of the project, nine speech-language pathologists or audiologists from various regions of the country will be trained to use the previously-developed and tested modules and present workshops at additional Speech-Language-Hearing Association meetings. The number and range of modules to be developed will allow workshops to be tailored to the individual needs of state associations, as well as for sequencing of workshops.

Information about both ASHA initiatives is available from Camille Catlett or Betsy Ayankoya, ASHA, 10801 Rockville Pike, Rockville, MD 20852, tel: (301) 897-5700.